



# PLUS IoT MODULE PIM101

## INSTALLATION GUIDE

IG\_PLUS\_PIM101\_IOT\_E01B

# PLUS IOT MODULE PIM101

## INSTALLATION GUIDE

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# PLUS IOT MODULE PIM101

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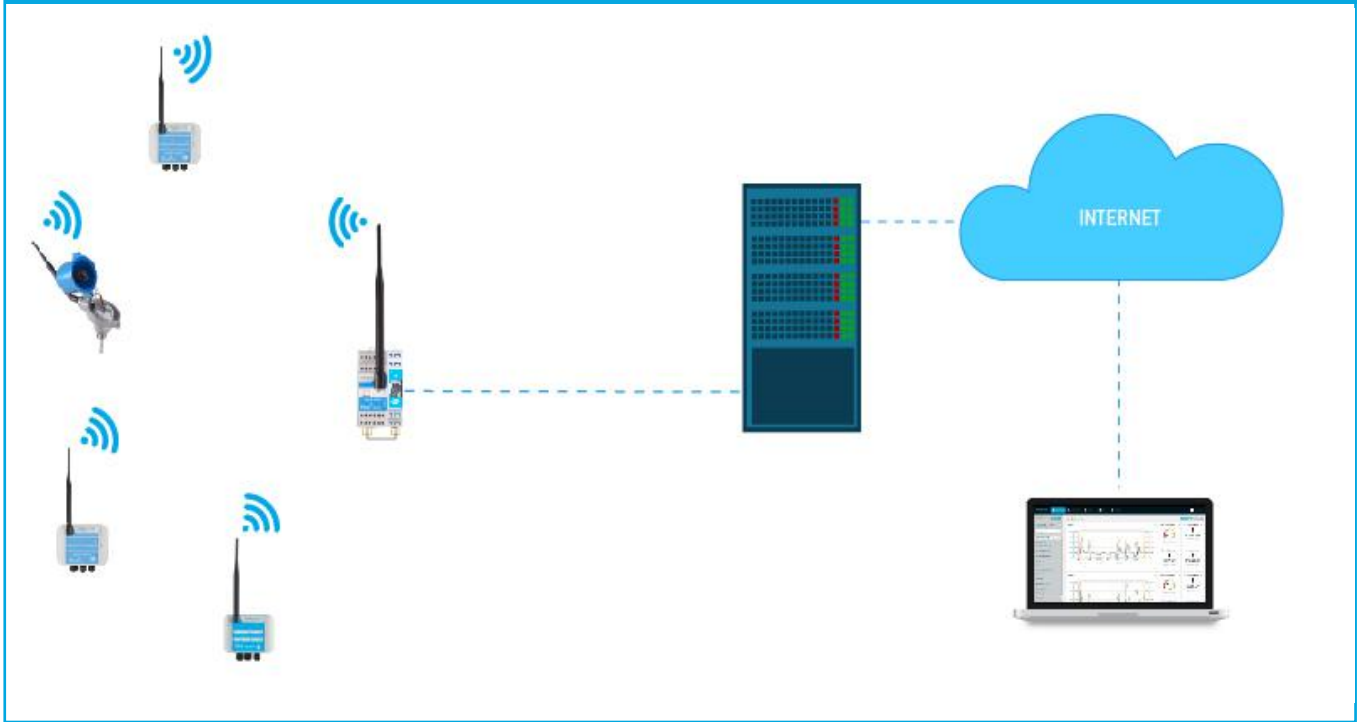
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step

**01**

SYSTEM ARCHITECTURE AND MINIMUM REQUIREMENTS

SYSTEM ARCHITECTURE



MINIMUM REQUIREMENTS

The right application of PLUS PIM101 IoT only occurs if all minimum requirements are met by the customer side. The architectural minimum requirements needed to successfully use this device are:

- **Ethernet cable** (included with your PLUS PIM101 IoT);
- **DHCP server;**
- **Web browser with the latest version;**

You must have a DHCP server in your network. The main purpose of this kind of server is to automatically provide and assign IP addresses and other networks parameters to connected devices.

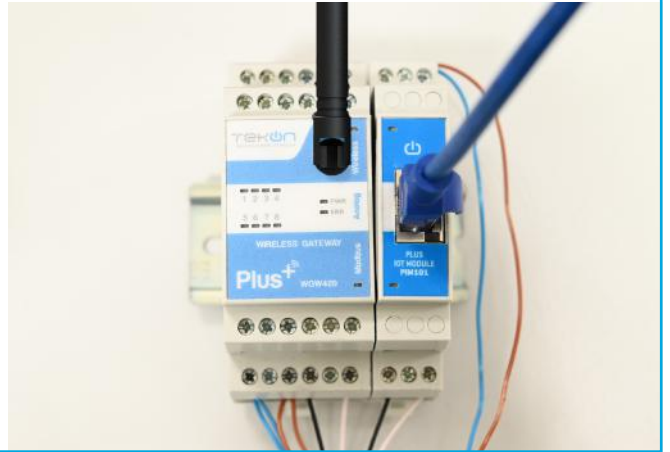
step

02

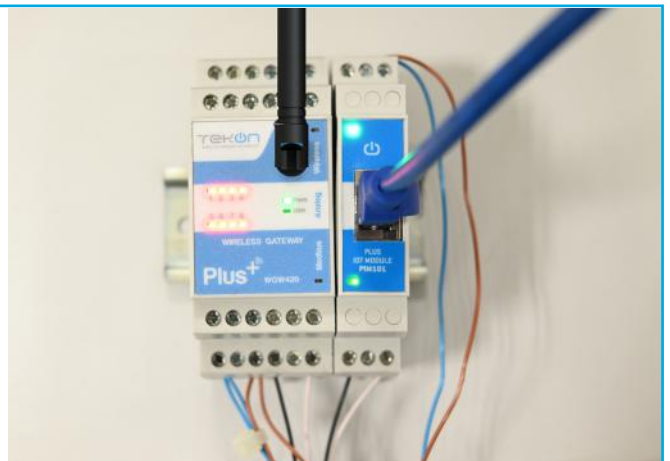
CONFIGURATION AND CONNECTION OF PLUS PIM101 IOT

## CONFIGURATION AND CONNECTION

Plug the ethernet cable that follows with your gateway to the device's input and to your network.



Wait until the green LED from PLUS PIM101 IoT goes off and red LED starts to blink.



step  
**02**

CONFIGURATION AND CONNECTION OF PLUS PIM101 IOT

ACCESS TO PIM101 IoT Module THROUGH WIFI



The access through this interface only allows the configuration and consultation of PLUS PIM101 IoT. Unable to send data to the cloud over this channel.

PLUS PIM101 IoT appear with a SSID with the following configuration *PIM101-<hostname>*. By default, the devices with SSID *PIM101-Tekon*.

Connect to the wifi network provided by the IoT module.

Use the password *bresimar* to login.



PLUS PIM101 IoT has a fixed IP address assigned to be accessed via mobile phone, tablet or pc (through Wi-Fi). The interface designed to interact with the device can be accessed through its fixed IP ([192.168.128.1](http://192.168.128.1)) or its SSID address (<http://Tekon>). The factory-defined and configurable access data:

- **Login:** admin
- **Password:** admin



**NOTE:**

First access to the IoT Module may have a long waiting time and should not be confused with a lack of response.



**NOTE:**

SSID (Tekon) address access is possible until it is changed. After the change, you must access by the user-defined SSID.

step

**02**

CONFIGURATION AND CONNECTION OF PLUS PIM101 IOT

## ACCESS TO PIM101 IoT Module THROUGH ETHERNET

The connection PLUS PIM101 IoT via Ethernet is via your web browser by accessing to the fixed IP address [192.168.100.1].

The default login credentials are:

- **Login:** admin
- **Password:** admin

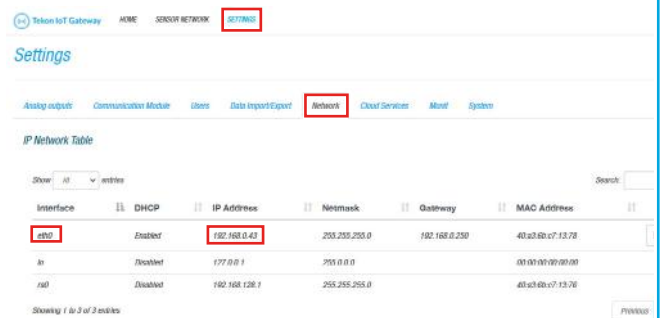


**NOTE:**

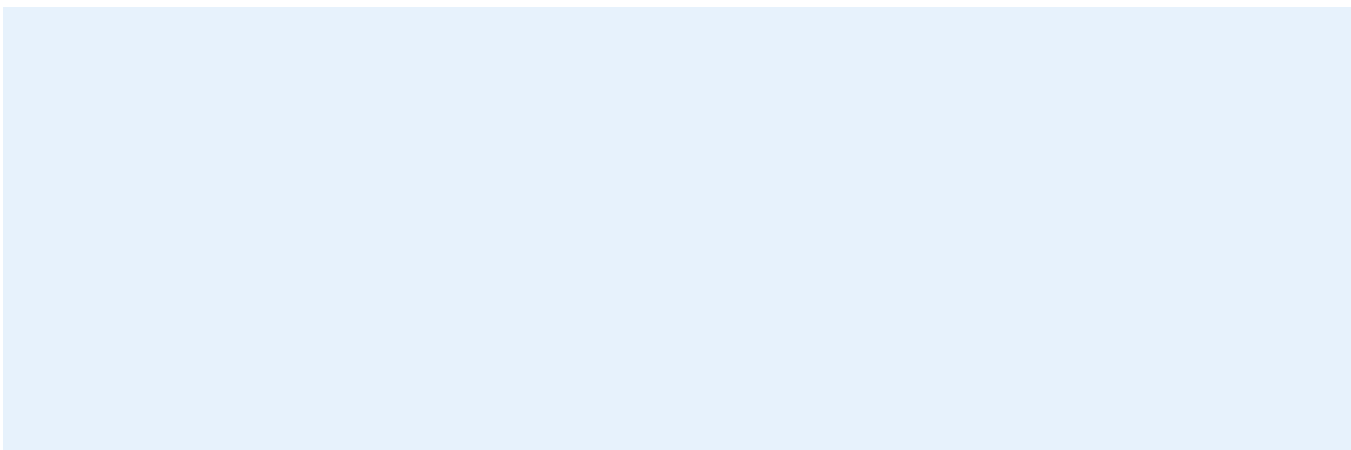
PLUS PIM101 IoT access credentials displayed by default can be edited in "Settings" -> "Users" menu.

To check if your gateway already has a ethernet network-assigned IP address, after logging in with the previous credentials, click in *Settings* >> *IP Network* tab.

You can check the IP address assigned to you by the network for your device.



Write down the IP address of your device's ethernet port. It will be needed throughout your manual.

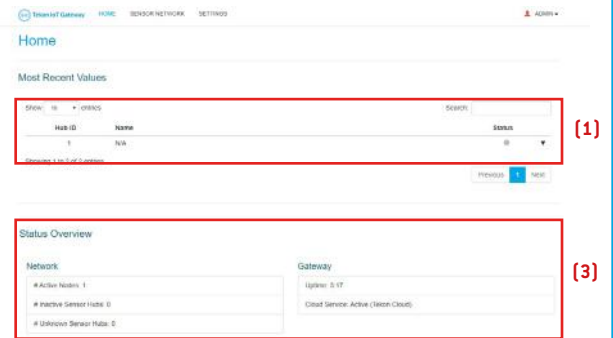




step  
**03** | TRANSMITTER ACTIVATION

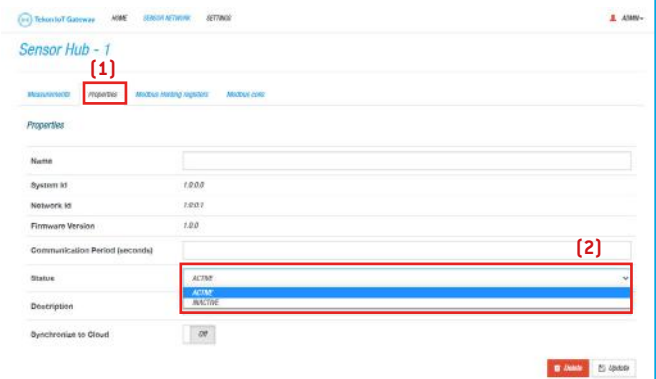
**TRANSMITTER ACTIVATION**

At login, the graphical interface displays the transmitters that are connected to the network. The first presentation of devices connected to the network is through a vertical listing (1). To get an overview of your system, at the bottom of the main page, you will find information about the activity and links established (3).



The transmitters are listed in ascending numerical order. By default, the name appears with “N/A” until it is edited and reset. The *Hub ID* field match to the *Transmitter ID* field defined in *Tekon Configurator* over the transmitter configuration.

Click on the Hub ID field of the transmitter to activate. You will be redirected to the selected transmitter page, select the *Properties* tab (1) if the status of the device is *Active* (2).



The transmitter is activated.  
Transmitter information available for all the interfaces.



If you would like to send data from this transmitter to Tekon IoT Platform, set the *Synchronize to Cloud* field to *On* mode and save the changes. We will return to this subject shortly.

step

# 03

## TRANSMITTER ACTIVATION

In the “Properties” tab, fill in the fields:

- **“Name”** and **“Description”** according to your preference;
- **“Communication Period”** according to the intended transmitter communication period;
- **“Synchronize to Cloud”** must be **“ON”** to send data to the cloud

Save the changes in the *Update* button.

The screenshot shows the 'Sensor Hub - 1' configuration page. The 'Properties' tab is selected. The following fields are highlighted with red boxes:

- Name:** Commercial Warehouse
- System ID:** 10009
- Network ID:** 10007
- Firmware Version:** 1.0.0
- Communication Period (seconds):** 15
- Status:** ACTIVE
- Description:** Black transmitter in commercial warehouse
- Synchronize to Cloud:** ON

At the bottom right, there are buttons for 'Back' and 'Update'.

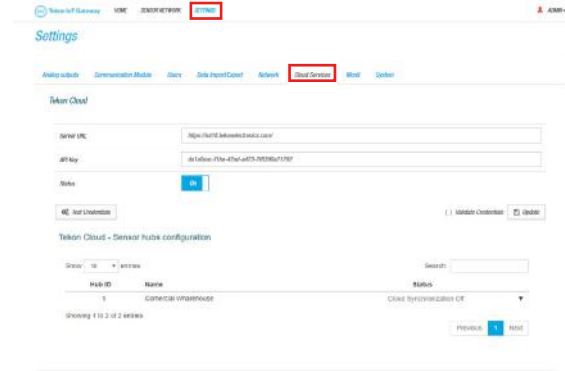


The transmitter is configured.

step  
**04** | CONNECTION TO TEKON IOT PLATFORM

CONNECTION TO TEKON IOT PLATFORM

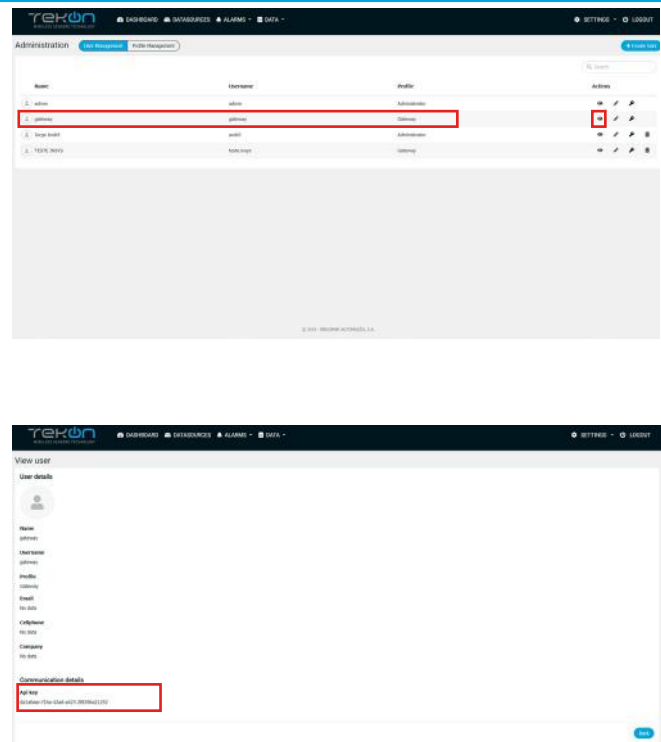
In the PLUS PIM101 IoT page, go to *Settings* >> *Cloud Services*.



In a new browser page, access your Tekon IoT Platform and go to *Settings* >> *Administration*.



Click on the view option to see the *gateway* user data and copy the API key.



step

# 04

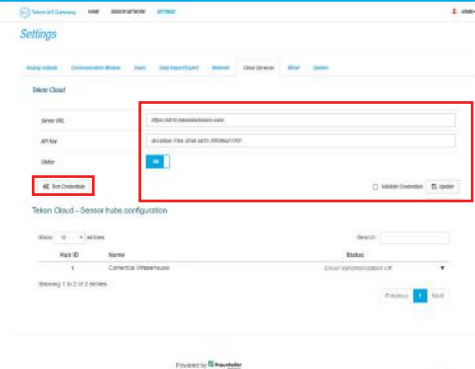
## CONNECTION TO TEKON IOT PLATFORM

In the PLUS PIM101 IoT page, fill in the fields:

- **“Server URL”** with your Tekon IoT Platform address;
- **“API Key”** with the Api key previously copied;

Change the *Status* field value to *On* and click on *Test Credentials* to test your credentials of configuration.


Click in *Update* to save the changes.

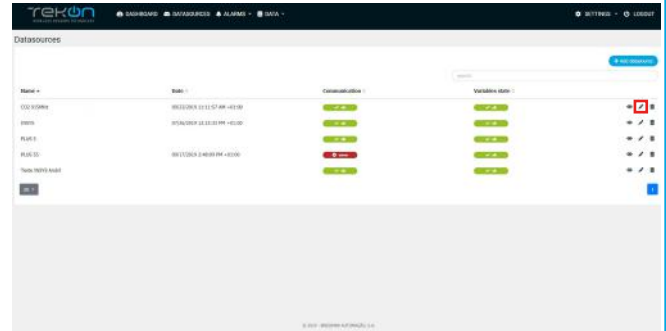


Your PIM101 IoT Module is now connected to your Tekon IoT Platform.

step  
**05** SEND TRANSMITTER DATA TO TEKON IOT PLATFORM

SEND TRANSMITTER DATA TO TEKON IOT PLATFORM

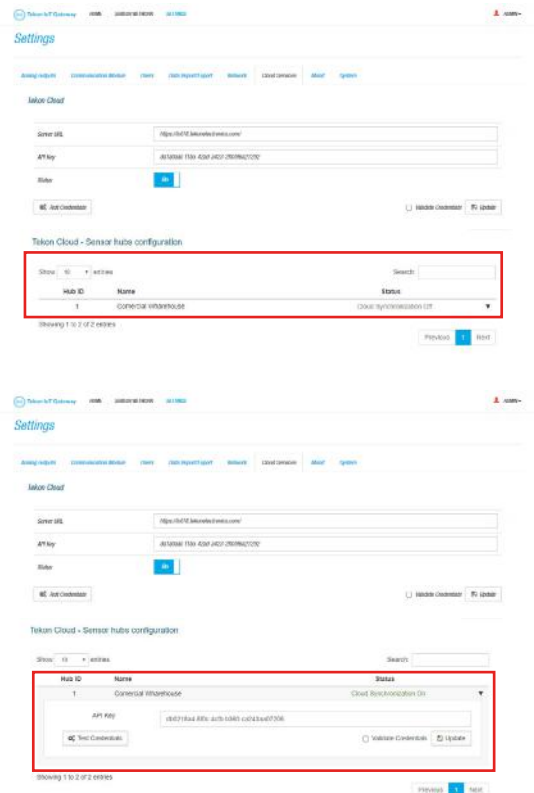
Access to your Tekon IoT Platform, click at the [Datasources](#) menu and the button  to edit the datasource where you want to send the transmitter data.



Copy the API key from the datasource and go back to your PLUS PIM101 IoT page.

On the page, select the transmitter you want to match, fill in the [API Key](#) field with the copied value and click on [Update](#).

Click on [Test Credentials](#) to validate the API Key of your datasource.



**NOTE:**

The message “Cloud Synchronization On” will only be visible if you have activated the option “Synchronize to Cloud” in the “TRANSMITTER ACTIVATION” step to activate your transmitter. If you did not perform the validation, the message “Cloud Synchronization Off” will be displayed in the “Status” field.



Your transmitter is now connected to your Tekon IoT Platform.

step

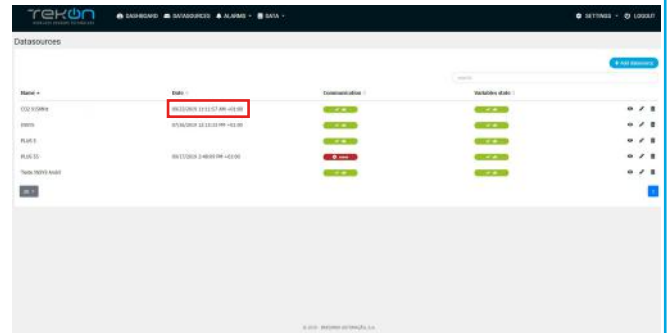
**05**

SEND TRANSMITTER DATA TO TEKON IOT PLATFORM

## VERIFY COMMUNICATION WITH TEKON IOT PLATFORM

To verify if the information acquired by the transmitter is effectively reaching your [Tekon IoT Platform](#), click on the [Datasources](#) menu and check the date of the latest communication between the platform and the transmitter.

This log will tell if the communication process is on or not.



step  
**06** | DATA COMMUNICATION VIA MODBUS TCP/IP

**DATA COMMUNICATION OVER MODBUS TCP/IP**

You can preview the PLUS PIM101 IoT graphical interface of Modbus TCP/IP communication. In each transmitter you can analyze different common parameters in modbus communications.

Click on the transmitter / hub you want to analyze and select the **Modbus Holding Registers** tab.

| Register Variable        | Actual Value | Register Address | Register Value | Register Type    | Register Format |
|--------------------------|--------------|------------------|----------------|------------------|-----------------|
| Serial Number            | 123          | 0                | 0x00007B       | Holding Register | UINT32          |
| Transmitter Model        | TMP-10T      | 2                | 0x00002D       | Holding Register | UINT16          |
| RSSI                     | -55dbm       | 3                | 0x00006E       | Holding Register | UINT16          |
| Communication Period     | 10s          | 4                | 0x00003A       | Holding Register | UINT16          |
| Elapsed Time             | 1004521571s  | 5                | 0x00A3E03      | Holding Register | UINT32          |
| Battery Voltage          | 2.8V         | 6                | 0x000014       | Holding Register | UINT16          |
| Ambient Temperature      | 22.37°C      | 7                | 0x100A73C3     | Holding Register | FLOAT32         |
| External Temperature 1   | 4145.01°C    | 8                | 0x45F10CE1     | Holding Register | FLOAT32         |
| Firmware Major / Minor   | 1.0          | 17               | 0x001000       | Holding Register | UINT16_UINT8    |
| Firmware Revision        | 0            | 18               | 0x000000       | Holding Register | UINT16          |
| HW Version Major / Minor | 0.0          | 19               | 0x000000       | Holding Register | UINT16_UINT8    |

In this page, you have the selected transmitter modbus scheme.

- (1): variable names;
- (2): current value recorded;
- (3): modbus address;
- (4): register value;
- (5): register type;
- (6): register format;

| Register Variable        | Actual Value | Register Address | Register Value | Register Type    | Register Format |
|--------------------------|--------------|------------------|----------------|------------------|-----------------|
| Serial Number            | 123          | 0                | 0x00007B       | Holding Register | UINT32          |
| Transmitter Model        | TMP-10T      | 2                | 0x00002D       | Holding Register | UINT16          |
| RSSI                     | -55dbm       | 3                | 0x00006E       | Holding Register | UINT16          |
| Communication Period     | 10s          | 4                | 0x00003A       | Holding Register | UINT16          |
| Elapsed Time             | 1004521571s  | 5                | 0x00A3E03      | Holding Register | UINT32          |
| Battery Voltage          | 2.8V         | 6                | 0x000014       | Holding Register | UINT16          |
| Ambient Temperature      | 22.37°C      | 7                | 0x100A73C3     | Holding Register | FLOAT32         |
| External Temperature 1   | 4145.01°C    | 8                | 0x45F10CE1     | Holding Register | FLOAT32         |
| Firmware Major / Minor   | 1.0          | 17               | 0x001000       | Holding Register | UINT16_UINT8    |
| Firmware Revision        | 0            | 18               | 0x000000       | Holding Register | UINT16          |
| HW Version Major / Minor | 0.0          | 19               | 0x000000       | Holding Register | UINT16_UINT8    |



**NOTE:**

In this example we used the transmitter / hub 1. The first modbus address of its variables starts at 0. To find the modbus address calculation formula defined for PLUS PIM101 IoT, please refer the datasheet on Tekon Electronics website.



To access to the records via **Modbus TCP/IP** in real time, you must use a program developed for this purpose, external to Tekon Electronics.

**Configuration of Modbus TCP/IP:**

- PLUS PIM101 IoT IP;
- Port: 1502;

step  
**07** | CONFIGURE ANALOG OUTPUTS

**CONFIGURE ANALOG OUTPUTS**

You can configure PLUS system analog outputs on PLUS PIM101 IoT web interface.

Go to [Settings](#) >> [Analog outputs](#) to access to the configuration of the 8 analog outputs.

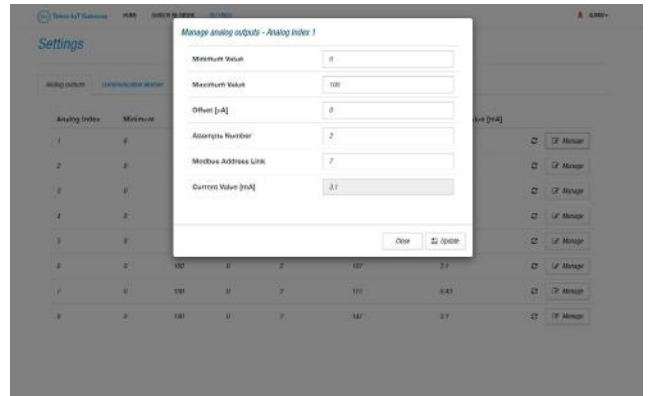
A list with the 8 analog outputs configuration will be shown.

| Analog Index | Minimum | Maximum | Offset[ $\mu$ A] | Attempts Num. | Modbus Addr. Link | Current value [mA] |                          |                          |
|--------------|---------|---------|------------------|---------------|-------------------|--------------------|--------------------------|--------------------------|
| 1            | 0       | 100     | 0                | 2             | 7                 | 3.1                | <input type="checkbox"/> | <input type="checkbox"/> |
| 2            | 0       | 100     | 0                | 2             | 27                | 7.24               | <input type="checkbox"/> | <input type="checkbox"/> |
| 3            | 0       | 100     | 0                | 2             | 47                | 3.1                | <input type="checkbox"/> | <input type="checkbox"/> |
| 4            | 0       | 100     | 0                | 2             | 67                | 3.1                | <input type="checkbox"/> | <input type="checkbox"/> |
| 5            | 0       | 100     | 0                | 2             | 87                | 3.1                | <input type="checkbox"/> | <input type="checkbox"/> |
| 6            | 0       | 100     | 0                | 2             | 107               | 3.1                | <input type="checkbox"/> | <input type="checkbox"/> |
| 7            | 0       | 100     | 0                | 2             | 127               | 8.43               | <input type="checkbox"/> | <input type="checkbox"/> |
| 8            | 0       | 100     | 0                | 2             | 147               | 3.1                | <input type="checkbox"/> | <input type="checkbox"/> |

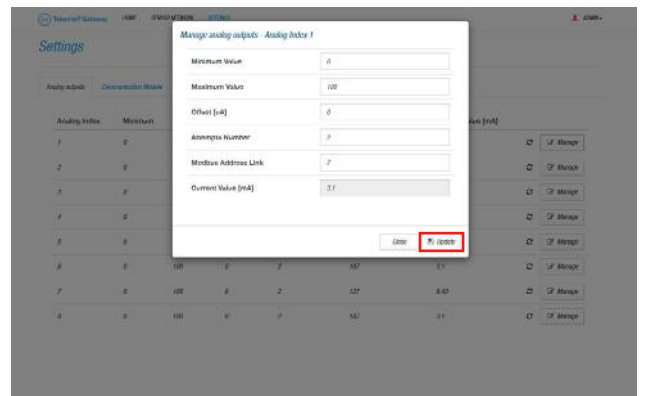
Click on [Manage](#) button of the modbus analog output you want to edit.

A pop-up window will show up with the output values:

- (1): **Minimum Value** - corresponding to 4 mA;
- (2): **Maximum Value** - corresponding to 20 mA;
- (3): **Offset [ $\mu$ A]** - current offset to refine measurement process;
- (4): **Attempts Number** - number of communication failures to notice an error ;
- (5): **Modbus Address Link** - analog output modbus address ;
- (6): **Current Value [mA]** - current value measured;



Click on [Update](#) to save the configuration.





step  
**08** | CONFIGURE MODBUS COILS

## CONFIGURE MODBUS COILS

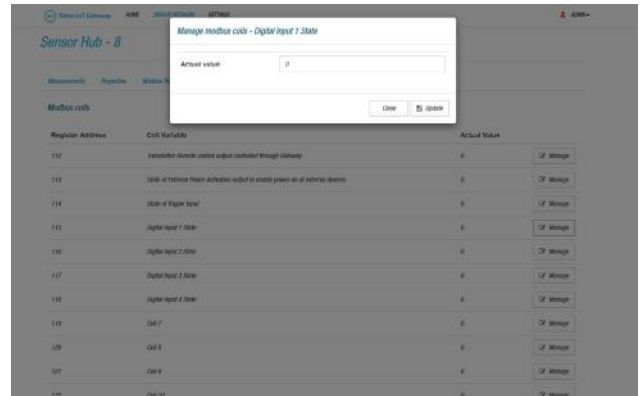
You can configure PLUS system modbus coils on [PLUS PIM101 IoT](#) web interface.

Select and click on the sensor hub you want to configure. Click on [Modbus coils](#) tab to list the available modbus coils.

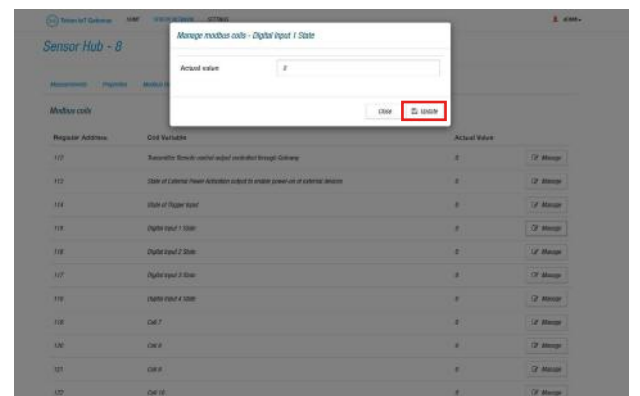
| Register Address | Coil Variable   | Actual Value |          |
|------------------|---|--------------|----------|
| 117              | Transceiver Remote control output controlled through Gateway                      | 0            | [Manage] |
| 118              | State of External Firearm Activation output to enable power-on of external device | 0            | [Manage] |
| 114              | State of Paper Input  | 0            | [Manage] |
| 115              | Digital Input 1 State   | 0            | [Manage] |
| 116              | Digital Input 2 State   | 0            | [Manage] |
| 117              | Digital Input 3 State   | 0            | [Manage] |
| 118              | Digital Input 4 State   | 0            | [Manage] |
| 119              | Coil 7  | 0            | [Manage] |
| 120              | Coil 8  | 0            | [Manage] |
| 121              | Coil 9  | 0            | [Manage] |

Click on [Manage](#) button of the modbus coil you want to edit.

A pop-up window will show up with the coil value.



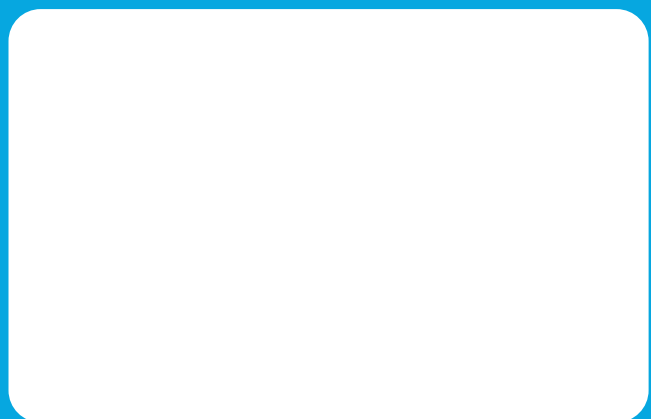
Click on [Update](#) to save the configuration.



**TEKON ELECTRONICS**  
a brand of Bresimar Automação S.A.

Avenida Europa, 460  
Quinta do Simão  
3800-230 Aveiro  
PORTUGAL

P.: +351 234 303 320  
M.: +351 933 033 250  
E.: sales@tekonelectronics.com



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